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Originate, Create, Renovate, and Innovate: Leading Revolution in the Academic Library

Following the Evidence: Approaches to Assessment in Academic Libraries

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Abstract

In an environment of strained budgets and heightened accountability, academic libraries need to base their planning, decision-making, and advocacy on evidence more than ever before. Fortunately, the resources required to collect, analyze, and visualize data—thus turning it into evidence—are increasingly accessible. This session will challenge participants to grow in their handling of evidence by exposing them to a range of data sources and analysis tools. In order to accomplish this goal, the presenter will share brief sketches of a number of recent library assessment efforts, focusing on projects with which he has been involved personally. The session's brevity will preclude showing participants the mechanics of any specific kind of assessment. Therefore, the presenter's primary aim will be to impart a vision for using evidence to increase efficiency and enhance customer satisfaction. A secondary aim will be to refer participants to a variety of resources for further exploration: tools, books, journal literature, conferences, and more.

I joined the library leadership team at Liberty University in 2003. At the time, our library supported fewer than 8,000 students. Over the next six years our enrollment quadrupled. We have become a major hybrid institution, combining large residential and distance learning programs. Exponential enrollment growth has had an impact on library operations, to say the least. One impact has been in the area of our interlibrary loan (ILL) borrowing, which we see as a reflection of weak local holdings.

As Figure 1 shows, our ILL borrowing grew rapidly from 1999-2000 through 2005-06, while our lending to other libraries remained flat. In the fall of 2006 I began spending about half my time on library assessment. My first major project was to find solutions to our ILL problem, which was actually a set of collection management problems. Analyzing details of more than 20,000 borrowing records allowed us to identify patterns that revealed weaknesses in our collection. We made a number of changes that have stabilized our ILL borrowing and have led to increased lending.

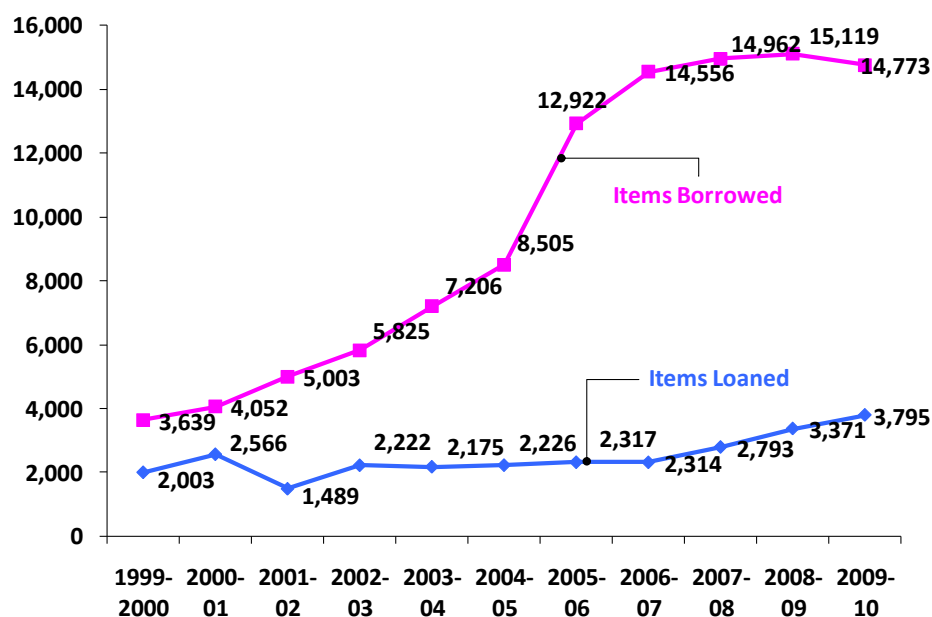


Figure 1. Interlibrary loan transactions, 1999-2000 to present

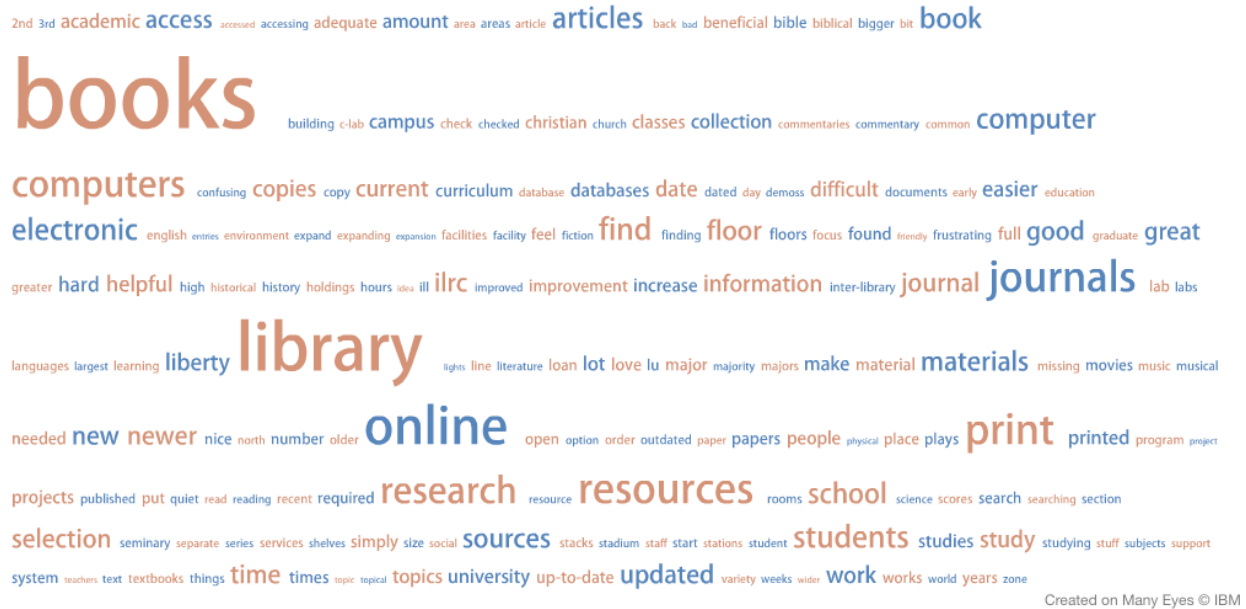


Figure 2. Survey comments - Tag Cloud visualization

For several years we have administered an annual survey to our resident students. In addition to collecting quantitative data, we ask open-ended questions. That tends to generate a lot of text that cannot be analyzed with a simple average, median, or percentage. Recently I have begun using some free text analysis tools that help make sense of large textual data sets. An IBM-sponsored site called Many Eyes provides powerful visualization tools, including the Tag Cloud and Word Cloud shown in Figures 2 and 3, respectively. The Tag Cloud is interactive: Hovering over a word makes the system display instances where the words appear in the data set. On the other hand, the Word Cloud allows the user more control over formatting details such as font, colors, and the orientation of the words. One caveat about Many Eyes is that data and visualizations reside on the Web site in public view; therefore, the tool is unsuitable for visualizing sensitive data.



Figure 3. Survey comments - Word Cloud visualization

About three years ago we licensed LabStats software from Computer Lab Solutions to monitor use of our computers. Since we manage the computer labs for our campus (some 800 workstations), this is a critical piece of our operations. LabStats allows us to track use of each machine—by user, login/logout time, operating system, location, software used, and more. Each month I download data from LabStats and keep an eye on basic measures. Nearly a year ago I conducted a major analysis of computer lab use. Manipulating login history data with Microsoft Excel PivotTables showed that our labs hosted at least 8,000 unique users during most weeks of the fall 2009 semester. As Figure 4 shows, LabStats data also made it clear that we have many different categories of users. In a given week, a quarter of our users logged in just once. At the other end of the spectrum are our most frequent users (18%), who log in, on average, at least once per day.

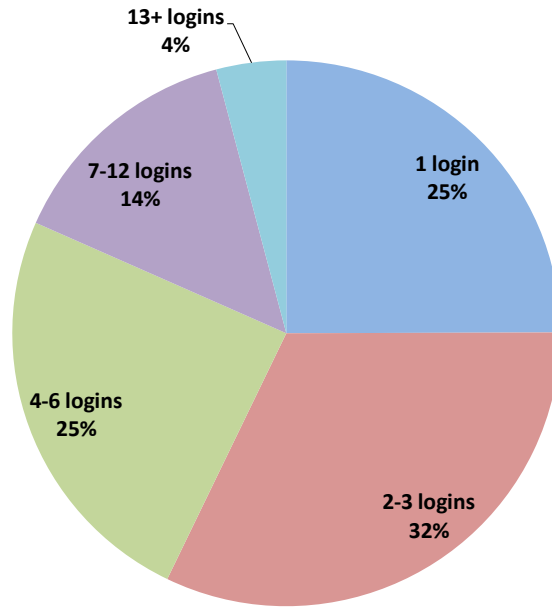


Figure 4. Weekly computer lab logins per user

WorldCat Collection Analysis is a tool from OCLC that we have licensed to help with assessment and decision-making. Last spring I used it to analyze our philosophy and religion holdings by format, date of publication, language, and comparison with peer institutions. Along with other sources of data, it readily revealed the most salient deficiencies in an important segment of our collection. Figure 5 shows some of the results of that analysis. I used Excel's Conditional Formatting feature to mark up the data, which helps the eye assimilate the information quickly.

Titles Held by at Least Four Peer Theological Libraries Conspectus Category: Philosophy & Religion

	Titles Held by LU	Titles Not Held by LU	% of Titles Held by LU	Shortfall vs. 35% Overlap
Philosophy & Religion	6,926	24,233	22%	3,987
Aesthetics	1	3	25%	1
Bible	2,041	8,041	20%	1,488
Buddhism	1	32	3%	11
Christianity	914	3,245	22%	542
Doctrinal Theology	1,063	3,254	25%	448
Eastern Christian Churches & Ecumenism	23	176	12%	47
Ethics	84	334	20%	63
Islam, Bahaism, Theosophy, etc.	67	270	20%	51
Judaism	103	815	11%	219
Logic	1	5	17%	2
Philosophy - Ancient, Medieval, Renaissance	27	164	14%	40
Philosophy - Modern (1450/1600-)	47	268	15%	64
Philosophy - Periodicals, Societies, Congresses	5	20	20%	4
Practical Theology	1,828	3,854	32%	161
Protestantism	343	1,608	18%	340
Religions, Mythology, Rationalism	281	1,331	17%	284
Roman Catholic Church	70	727	9%	209
Speculative Philosophy	27	86	24%	13

Figure 5. Philosophy and religion holdings - peer comparison

Publicly accessible data, like that collected in the biennial Academic Libraries Survey (ALS), can be very valuable for evaluation and planning. As Liberty University has grown, its peer group has evolved. ALS data help to benchmark our library services against those of comparable institutions. Last spring I merged data from three sources—the ALS, the Carnegie Foundation, and *U.S. News & World Report*—to discover how the growth of distance learning programs impacts a hybrid institution's library expenditures. I found that enrollment growth alone is not much of a predictor of higher spending. However, as Figure 6 shows, if a hybrid institution advances along the Carnegie Classification continuum, it can expect to find itself among peers with much higher total library expenditures per student.

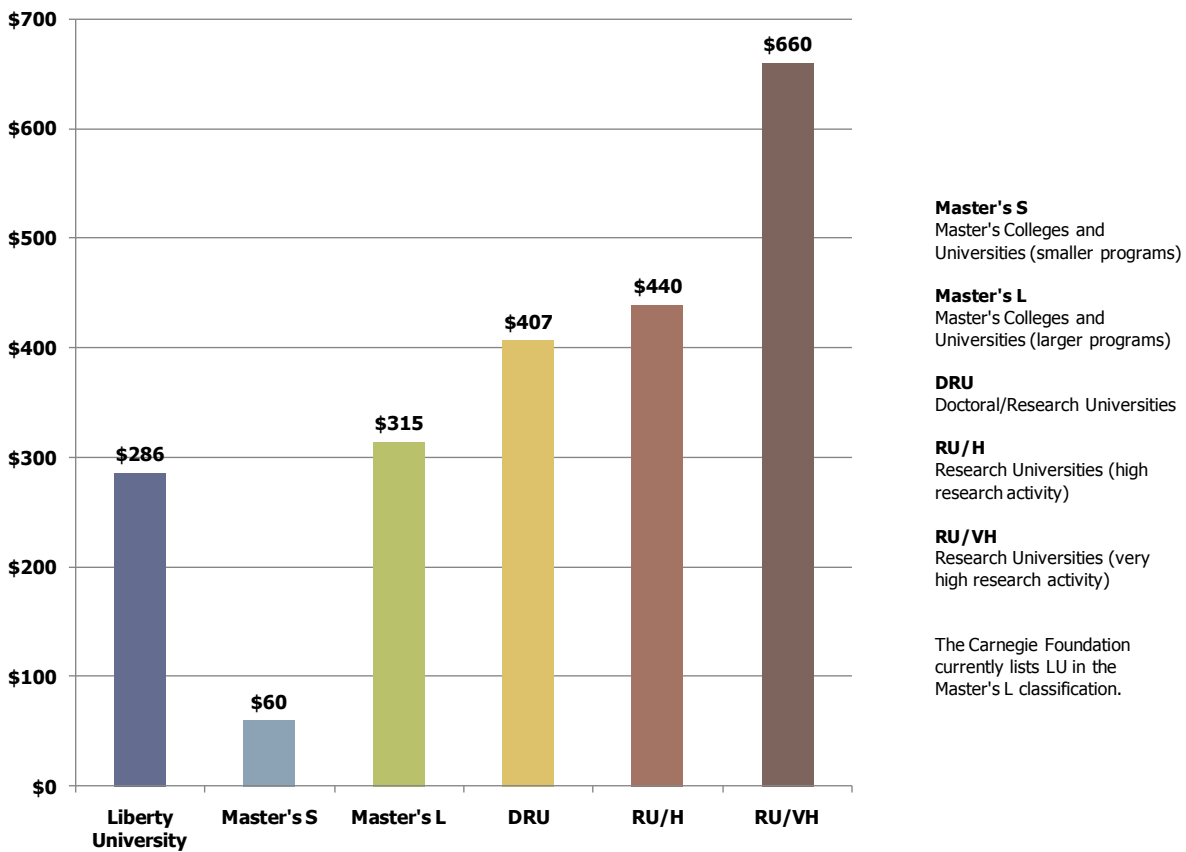


Figure 6. Median library expenditures per FTE student, by Carnegie Classification

Figure 7 shows how I have begun using Excel to help me make collection development decisions in the area of communication studies. The source of the data in this case is one of our book jobbers. A formula in the far left column assesses four criteria—the occurrence of certain keywords in the title, audience level, strength of recommendation, and price—and ultimately yields a percentage that expresses the likelihood that we should acquire it. Conditional Formatting helps me to notice important details, ultimately freeing me to spend my time making the kinds of judgments that would be more difficult to automate.

34%	Virtual Team Success: A Practical Guide For Working And Leading From A Distance.	Virtual Work Teams.	Us	\$43.00	HD	Prof	Supplementa
48%	Being There Together: Social Interaction In Virtual Environments.	1. Social Interaction. 2. Shared Virtual Environments.	Us	\$55.90	HM	Adv-Ac	Research-Re
33%	Pathways From Ethnic Conflict: Institutional Redesign In Divided Societies	Ethnic Conflict--Case Studies.	Uk	\$107.50	HM	Adv-Ac	Supplementa
57%	Texture: Human Expression In The Age Of Communications Overload.	Communication--Technological Innovations--	Us	\$25.76	HM	Gen-Ac	Basic-Recon
58%	Media, Culture, And Mediality: New Insights	Mass Media--Research.	Germany	\$54.95	P	Adv-Ac	Research-Re
30%	Prezi For Dummies.	Presentation Graphics Software.	Us	\$21.49	P	Pop	
41%	Speaking Frames: How To Teach Talk For Writing: Ages 8-10.	1. Oral Communication--Study & Teach. 2. Rhetoric--	Uk	\$36.08	P	Prof	
55%	Political Economy Of Communications In India: The Good, The Bad And The Ugly.	1. Mass Media--Economic Aspects--India. 2. Mass Media Policv--India.	India	\$34.36	P	Adv-Ac	Research-Re
52%	Global Terrorism And New Media: The Post-Al Qaeda Generation.	1. Terrorism And Mass Media. 2. Terrorists --Recruiting.	Uk	\$32.64	P	Adv-Ac	Research-Re
45%	Broadcasting The Civil War In El Savador: A Memoir Of Guerrilla Radio; Trans. By Charles	1. Radio Venceremos (El Salvador)--Hist. 2. Guerrillas--	Us	\$47.30	PN	Adv-Ac	Research-Re

Figure 7. Book jobber data with Conditional Formatting

As we conclude this presentation, we return to student surveys, but in this case the data are quantitative rather than qualitative. Figure 8 represents a first attempt to produce a report card regarding the library's holdings in a particular discipline. The data themselves are subjective, representing students' perceptions on a variety of points. The intent of the report card approach is to support collection management decisions. Once again, Conditional Formatting plays a role in helping the eye to make sense of a wealth of data.

English & Modern Languages

	Value	Minimum	Median	Maximum	Source
Program-Specific Attributes					
Courses Requiring Use of Library Resources: SO-SR, 2008-2010	61%	37%	51%	63%	RS08-10
Average Citation Lifespan of Books in Major (Years)	15.0	7.2	9.7	16.9	PL10
Concern - Outdated Materials (Scale of 0-2)	0.67	0.67	0.80	1.44	PL10
Concern - Limited Current Materials (Scale of 0-2)	1.17	0.68	1.02	1.38	PL10

Satisfaction

Average Satisfaction with Book Holdings (Scale of 0-3)	●	1.83	1.55	1.76	2.07	PL10
Average Satisfaction with Book Holdings: SO-SR, 2008-2010 (Scale of 0-3)	●	1.62	1.51	1.87	2.19	RS08-10
Average Satisfaction with Journal Holdings (Scale of 0-3)	●	1.83	1.56	1.87	2.11	PL10
Average Satisfaction with Journal Holdings: SO-SR, 2008-2010 (Scale of 0-3)	●	1.95	1.83	1.95	2.21	RS08-10

Purchase Priorities

Priority for Purchase of Print Books	●	50%	13%	43%	69%	PL10
Priority for Purchase of E-Books	●	25%	7%	25%	50%	PL10
Priority for Purchase of Print Journals	○	0%	0%	0%	17%	PL10
Priority for Purchase of Online Journals	●	17%	9%	21%	43%	PL10

Experience with Use of ILRC Book Holdings

Books Available	○	50%	24%	41%	63%	PL10
Books Worn	●	17%	0%	14%	44%	PL10
Books Lost or Missing	●	17%	0%	13%	23%	PL10
Books Checked Out	●	25%	11%	18%	35%	PL10
Insufficient Books in Major	●	25%	11%	22%	41%	PL10
Outdated Books in Major	●	33%	11%	23%	34%	PL10

Figure 8. Collection management profile for a specific program area

Figure 9 is based on some of the same survey data. The visualization is a Treemap produced by Many Eyes. It portrays student satisfaction with book holdings by program area, as reported over the last three years. Darker colors indicate low satisfaction, and large rectangles represent populations that can be expected to make significant demands on library resources (due to the program's popularity and/or curricular requirements). In order to identify the areas of greatest perceived need, one must look for rectangles that are large and/or darkly shaded. The Treemap thus draws our attention to at least five program areas: Religion, Government, Psychology, English & Modern Languages, and History/Social Sciences.

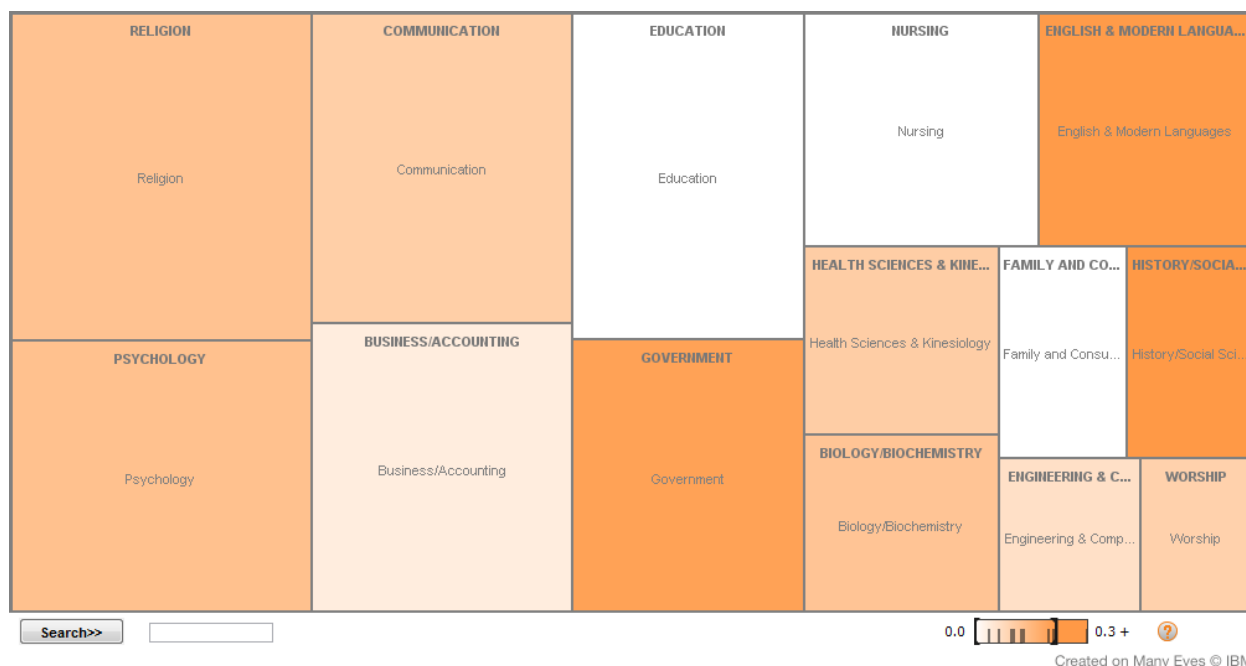


Figure 9. Satisfaction with book holdings - Treemap visualization

As the foregoing discussion has made clear, librarians have at their disposal an abundance of data sources: local and national, free and fee-based, qualitative and quantitative. The array of tools available for analysis and visualization is constantly expanding, and much of it is already on the desktop (Excel) or freely accessible on the Web (e.g., Many Eyes). Of course, there are numerous analysis and visualization tools that cost something, but the cost may well be justified by the outcome of more informed decision-making.

Librarians who wish to learn better how to follow the evidence can choose from many growth and development opportunities, as shown in the list of resources below. The issue is really whether we will seize those opportunities. Today's academic libraries face a significant amount of competition. This competition comes from information providers in the corporate sector that some might perceive as viable or preferred alternatives to academic libraries. It also comes from every other unit within our institutions—academic or non-academic—that is vying for a slice of the funding pie. Regardless of the source of competition, following the evidence will empower us to provide high-quality service, demonstrate the value that we provide or add, and perpetuate the academic library tradition.

Resources for Library Assessment

Books & Reports

- Dugan, R. E., Hernon, P., & Nitecki, D. A. (2009). *Viewing library metrics from different perspectives: Inputs, outputs, and outcomes*. Santa Barbara, CA: Libraries Unlimited.
- Oakleaf, M. (2010). *The value of academic libraries: A comprehensive research review and report*. Chicago, IL: American Library Association.
http://www.ala.org/ala/mgrps/divs/acrl/issues/value/val_report.pdf
- Pfeffer, J., & Sutton, R. I. (2006). *Hard facts, dangerous half-truths, and total nonsense: Profiting from evidence-based management*. Boston, MA: Harvard Business School Press.
- Tufte, E. R. (2001). *The visual display of quantitative information* (2nd ed.). Cheshire, CT: Graphics Press.

Articles

- Ackermann, E. (2007). Program assessment in academic libraries: An introduction for assessment practitioners. *Research & Practice in Assessment*, 1(2), 1-9.
<http://www.virginiaassessment.org/rpa/2/Ackermann.pdf>
 Summarizes traditional approaches to assessment in academic libraries. Describes data-gathering and analysis tools relevant to information literacy instruction, library services, and library resources. Discusses trends in library assessment and implications for the future.
- Adler, J. (2007, September 3). Era of the super-cruncher. *Newsweek*, 150, 42.
<http://www.newsweek.com/id/40860/output/print>
 Drawing on Ian Ayres's *Super Crunchers: Why Thinking-by-Numbers Is the New Way to Be Smart*, discusses how data mining is transforming fields as diverse as sports, journalism, law, commerce, and health care.
- Bernon, J. (2008). Why and how to measure the use of electronic resources. *Liber Quarterly: The Journal of European Research Libraries*, 18, 459-463.
<http://liber.library.uu.nl/publish/articles/000272/article.pdf>
 Discusses the challenges that libraries face as they seek to develop meaningful, accurate, and complete measures of electronic resource use. Articulates the need to measure activity in terms of document types, use types, and user categories. Maintains that a functional system will allow for cost-tracking and inter-institutional comparisons.
- Davis, H. (2009, November 11). Not just another pretty picture. *In the Library with the Lead Pipe*.
<http://www.inthelibrarywiththeleadpipe.org/2009/not-just-another-pretty-picture/>
 Discusses the importance of visualizing library data so as to support decision-making and communicate compellingly with constituents. Assesses three data visualization tools: Google Gadgets [whose functions have now been integrated into Google Docs], Many Eyes, and Swivel. Recommends some sources for inspiring ideas about visualizing data.
- Goddard, L. (2007). Getting to the source: A survey of quantitative data sources available to the everyday librarian: Part II: Data sources from specific library applications. *Evidence Based Library and Information Practice*, 2(1), 68-88.
<https://ejournals.library.ualberta.ca/index.php/EBLIP/article/view/152/241>
 Discusses ways to retrieve and analyze data captured from Web-based tools and services commonly used in libraries. Those tools and services include proxy servers, resource vendors, link resolvers, federated search engines, institutional repositories, electronic reference services, and integrated library systems.
- Hiller, S., & Self, J. (2004). From measurement to management: Using data wisely for planning and decision-making. *Library Trends*, 53, 129-155. <https://www.ideals.illinois.edu/handle/2142/1720>
 Summarizes the use of data in library management over the course of more than 30 years. Discusses various issues pertaining to the collection, analysis, and reporting of data. Describes data and assessment practices of four academic libraries that have excelled in these areas.

- Lakos, A. (2007). Evidence-based library management: The leadership challenge. *portal: Libraries and the Academy*, 7, 431-450. doi:10.1353/pla.2007.0049
Surveys the status of assessment-driven decision-making in libraries. Notes that many industries, including libraries, are leveraging information in order to compete, meet customer expectations, and even survive. Summarizes insights regarding assessment gleaned from interviews with some 20 library directors. Projects a vision for the future of library assessment.
- Self, J. (2004). Metrics and management: Applying the results of the balanced scorecard. *Performance Measurement and Metrics*, 5(3), 101-105. doi:10.1108/14678040410570111
Describes and evaluates the balanced scorecard's first year of use in the University of Virginia Library. This approach to organizational performance measurement seeks to balance attention to users, finance, internal processes, and the future; as such it involves a variety of metrics and stakeholders.
- White, M. D., & Marsh, E. E. (2006). Content analysis: A flexible methodology. *Library Trends*, 55, 22-45. <https://www.ideals.illinois.edu/handle/2142/3670>
Introduces content analysis—a specific form of textual analysis—as a method useful for conducting research in library and information science. Compares and contrasts quantitative and qualitative approaches to content analysis. Describes the assumptions, aims, procedures, and tools that apply to each approach.

Journals, Listservs, & Blogs

- ARL-ASSESS. A library assessment listserv sponsored by the Association of Research Libraries. To subscribe to this list, send an e-mail to ARL-ASSESS@arl.org.
- ASSESS. A listserv on higher education assessment hosted by the University of Kentucky. To subscribe, send a message to LISTSERV@LSV.UKY.EDU with the following command in the body of the message: SUBSCRIBE ASSESS.
- Evidence Based Library and Information Practice*. "The purpose of the journal is to provide a forum for librarians and other information professionals to discover research that may contribute to decision making in professional practice." Open access. <http://ejournals.library.ualberta.ca/index.php/EBLIP>

libraryassessment.info [Web log]. "A blog for and by librarians interested in library assessment, evaluation, and improvement supported by the Association of Research Libraries."
<http://www.libraryassessment.info>

Performance Measurement and Metrics: The International Journal for Library and Information Services. Coverage includes quantitative and qualitative analysis, benchmarking, methods for performance measurement and metrics, standard assessment tools, service quality, and more.

Other Sources

- Applegate, R. (2009). Designing comprehensive assessment plans: The big picture leads to the little picture. In D. M. Mueller (Ed.), *Pushing the edge: Explore, extend, engage: Proceedings of the Fourteenth National Conference of the Association of College and Research Libraries, March 12-15, 2009, Seattle, Washington* (pp. 165-171). Chicago: Association of College and Research Libraries. <https://scholarworks.iupui.edu/handle/1805/1877>
- TED (Producer). (2010, July). The beauty of data visualization: David McCandless on TED.com [Video file]. <http://blog.ted.com/2010/08/23/the-beauty-of-data-visualization-david-mccandless-on-ted-com/>

Conferences

- EBLIP6 [6th Evidence Based Library and Information Practice Conference]. Salford, Greater Manchester, UK, June 27-30, 2011. This conference is international in scope.
- Library Assessment Conference. The next instance of this biennial conference is set to take place in 2012 at the University of Virginia.
- MidAIR Annual Conference. MidAIR is the Mid-America Association for Institutional Research. Conferences are typically held in November, often in Kansas City. Due to their specialization in data analysis and presentation, institutional research officers may have much to offer to librarians responsible for assessment.

Northumbria International Conference on Performance Measurement in Libraries and Information Services. The eighth instantiation of this conference (PM8) was held in Florence, Italy, Aug. 17-20, 2009. Details of a ninth conference in this series have apparently not been released.

Analysis & Visualization Tools

Google Docs. This is a cloud-based suite of basic office tools (word processor, spreadsheet, etc.). Some of the “gadgets” available for use with spreadsheets make it possible to create innovative visualizations of numerical and textual data.

Many Eyes. Sponsored by IBM, this free tool creates interesting visualizations of numerical and textual data. It was designed for public sharing, interpretation, and commenting—hence its name.

Microsoft Office Excel. In the 2007 version, useful tools are scattered throughout the various tabs, including “Insert” (e.g., PivotTables, Charts), “Home” (e.g., Conditional Formatting), and “Data” (e.g., Filter, Text to Columns, Remove Duplicates). The 2010 version adds new capabilities (e.g., Sparklines). Install the Analysis ToolPak to get access to common statistical procedures.

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